UNION COUNTY COLLEGE MASTER COURSE SYLLABUS

COURSE NUMBER & NAME: CST 245 – Cloud and Personal Device Forensics

LECTURE/LAB HOURS: 4 lecture hours per week

CREDITS: 4 credit hours

PREREQUISITES: CST 176

COURSE DESCRIPTION: This course presents the various and emerging forensic tools used to recover evidence from Cloud storage and from personal devices, such as mobile phones, smartwatches, and voice-enabled devices. Students will learn how to analyze and interpret recovered data, as well as discover which tools are best suited for recovering valuable electronic evidence. The forensics challenges and issues of Cloud computing and the Internet of Things (IoT) will also be studied.

COURSE LEARNING OUTCOMES:
Upon successful completion of this course, students will be able to:

1. Discuss the technical and legal challenges of Cloud forensics and personal device forensics.
2. Compare predominate mobile device operating systems, such as Android (Google) and iOS (Apple).
3. Compare popular Cloud storage systems, such as Google Drive, Microsoft OneDrive, Apple pCloud, Amazon Web Services (AWS), and DropBox.
4. Use court-approved software tools and procedures to conduct a digital forensics examination involving mobile phones, personal devices, and Cloud computing.
5. Communicate effectively the results of a digital forensic analysis verbally, in writing, and in presentations to both technical and lay audiences.

COURSE MATERIALS:

1. Mahalik, Heather, Tamma, Rohit, and Bommisetty, Satish. *Practical Mobile Forensics*, 2nd Ed. Birminghamton, UK: Packt Publishing, 2016.
2. Choo, Kim-Kwang Raymond and Dehghantanha, Ali. *Contemporary Digital Forensic Investigations of Cloud and Mobile Applications*. Cambridge, MA: Elsevier, Inc., 2017.

COURSE REQUIREMENTS:

- The successful completion of semester exams and final exam.
- The completion of all written assignments and forensics projects.
- The completion of all assigned readings and homework.
- Attendance and class participation. Students are required to attend classes.

An essential element of this course includes information literacy. “Information Literacy” is the evaluation and assessment of integrated information. Students will be able to locate, discern, and effectively use information to solve issues and/or problems.

EVALUATION METHODS:

Student performance will be evaluated using the following methods, and the final grade will be calculated according to the following percentages:

- Attendance and Class Participation 10%
- Written Assignments 20%
- Projects and Presentations 30%
- Semester Exams 20%
- Final Exam 20%

CLASS SCHEDULE**:**

Week	Unit/Content	Learning Activities
ONE	Introduction to personal device forensics	Reading: Chapter 1 in Mahalik, et al. text. Written assignment.
TWO	Apple iOS internals & forensic tools	Reading: Chapters 2 and 3 in Mahalik, et al. text. Written assignment.
THREE	Data acquisition, recovery, and analysis of iOS devices	Reading: Chapters 5 and 7 in Mahalik, et al. text. Written assignment. **Forensics Project 1**.
FOUR	Google Android internals & forensic tools	Reading: Chapters 9 and 10 in Mahalik, et al. text. Written assignment.
FIVE	Data acquisition, recovery, and analysis of Android devices	Reading: Chapters 6 and 8 in Mahalik, et al. text. Written assignment.
SIX	**Semester Exam I**	Reading: Chapter 1 in Choo text. **Forensics Project 2**.
SEVEN	Introduction to Cloud computing	Reading: Apple pCloud case study, Chapter 12 in Choo text. Android Cloud case study, Chapter 15 in Choo text. Written assignment.
EIGHT	Digital forensics tools for Cloud storage	Reading: Chapter 13 in Choo text. Written assignment.
NINE	Data acquisition, recovery, and analysis of evidence in Cloud storage	Reading: CloudTimes.org Written assignment.
TEN	**Semester Exam II**	Reading: CloudForensicsResearch.org Written assignment.

ELEVEN	Writing and presenting a professional report of findings	Reading: ForensicMag.com Written assignment.
TWELVE	Digital forensic investigations involving evidence in Cloud storage, personal devices, and voice activated devices.	Reading: Case studies in Chapter 4 in Choo text. **Forensics Project 4**.
THIRTEEN	Introduction to IoT Forensics (Internet of Things)	Reading: *Forensics and the Internet of Things: the car of the future will be a data goldmine* - www.informationage.com/forensics-and-internet-things-car-future-will-be-data-goldmine-123458505 Written assignment to contribute to the Internet of Things Forensics bog at Champlain College - http://computerforensicsblog.champlain.edu/2015/10/09/internet-of-things-forensics/
FOURTEEN	Oral presentation of written report of findings.	Student presentations and written reports.
FIFTEEN	**Final Exam**	

SUGGESTED TEACHING METHODOLOGIES: (e.g. group presentations, research paper, lecture)

Lecture, class discussions, small group projects, forensics projects, student presentations, video resources, case studies, industry and government websites.

UNION COUNTY COLLEGE MASTER COURSE SYLLABUS

MAPPING COURSE LEARNING OUTCOMES
to LEARNING ACTIVITIES and EVALUATION METHODS

Course Learning Outcomes (CLOs)	Learning Activities	Evaluation Methods
Discuss the technical and legal challenges of Cloud forensics and personal device forensics.	Lectures, class discussions, video resources, case studies, and reading and written assignments in Mahalik chapter 1.	Semester exams, final exams, graded assignments, and projects.
Compare predominate mobile operating systems, such as Android (Google) and iOS (Apple).	Lectures, demonstrations, video resources, and reading and written assignments in Mahalik chapters 2, 3, 9 and 10.	Semester exams, final exams, graded assignments, and projects.
Compare popular Cloud storage systems, such as Google Drive, Microsoft OneDrive, Apple pCloud, Amazon Web Services (AWS), and DropBox.	Lectures, demonstrations, video resources, and reading and written assignments in Choo chapters 12 and 15.	Semester exams, final exams, graded assignments, and projects.
Use court-approved software tools and procedures to conduct a digital forensics examination involving mobile phones, personal devices, and Cloud storage.	Lectures, demonstrations, video resources, written assignments, and forensics projects - Choo chapter 13 and Mahalik chapters 5, 6, 7, and 8.	Semester exams, final exams, graded assignments, and projects.
Communicate effectively the results of a digital forensic analysis verbally, in writing, and in presentations to both technical and lay audiences.	Student presentations.	Oral presentations of written report of findings on digital forensic examinations.